

**THAT WHICH IS CLAIMED:**

1. A process for producing polymer coated substrates, comprising:  
co-extruding a molten polypropylene polymer layer and a molten polymer layer  
of a polyolefin polymer other than polypropylene selected to stabilize the molten  
5 polypropylene polymer layer to allow extrusion thereof, directly onto a surface of a  
cellulosic substrate so that the molten polypropylene polymer layer is disposed adjacent  
the cellulosic substrate, under conditions sufficient to oxidize the molten polypropylene  
layer to promote bonding thereof to the cellulosic substrate without a pretreatment step;  
and  
10 cooling said molten co-extruded polymer layers to form a coherent structure.
2. The process of Claim 1, wherein the co-extrusion step comprises co-extruding the polymer layers under conditions sufficient to oxidize the molten  
polypropylene layer to provide an adhesive strength between the polypropylene polymer  
layer and the cellulosic substrate that is greater than the cohesive strength of the  
15 cellulosic substrate.
3. The process of Claim 1, wherein the co-extrusion step comprises co-extruding the polymer layers at a temperature greater than about 550°F.
4. The process of Claim 3, wherein the co-extrusion step comprises co-extruding the polymer layers at a temperature of about 600°F
- 20 5. The process of Claim 1, further comprising applying pressure to the  
molten polyolefin/molten polypropylene/cellulosic substrate structure sufficient to cause  
the molten polypropylene to impregnate into at least a portion of the cellulosic substrate  
after the co-extruding step.
6. The process of Claim 5, wherein the pressure applying step comprises  
25 directing the molten polyolefin/molten polypropylene/cellulosic substrate structure into a  
nip formed by a pair of cooperating rolls.

7. The process of Claim 6, wherein the cooperating rolls include a pressure roll in direct contact with the cellulosic substrate and a chill roll in direct contact with the molten polyolefin polymer layer.

8. The process of Claim 7, wherein the pressure applying step and the  
5 cooling step occur substantially simultaneously.

9. The process of Claim 1, wherein the polyolefin polymer is a polyethylene polymer.

10. The process of Claim 9, wherein the polyethylene polymer is selected from the group consisting of high density polyethylene, low density polyethylene, linear  
10 low density polyethylene and copolymers, terpolymers, and blends thereof.

11. The process of Claim 10, wherein the polyethylene polymer is high density polyethylene.

12. The process of Claim 10, wherein the polyethylene polymer is low density polyethylene.

15 13. The process of Claim 1, wherein the polypropylene polymer is selected from the group consisting of polypropylene homopolymers, polypropylene co- and terpolymers, and polypropylene dominate blends.

14. The process of Claim 13, wherein the polypropylene polymer is a polypropylene homopolymer.

20 15. The process of Claim 1, wherein the cellulosic substrate is a paper substrate.

16. The process of Claim 1, wherein said co-extruding step comprises co-extruding said polypropylene polymer, said polyolefin polymer and at least one additional polymer so as to sandwich said polyolefin polymer between said  
25 polypropylene polymer and said additional polymer.

17. The process of Claim 16, wherein said additional polymer is polypropylene.

18. The process of Claim 1, wherein the polypropylene layer comprises the majority component of said co-extruded polymer layer.

5 19. A process for producing co-extruded polyolefin coated cellulosic substrates useful as release liners, comprising:

co-extruding a molten polypropylene polymer layer and a molten polyethylene polymer layer directly onto a surface of cellulosic substrate so that the molten polypropylene polymer layer is disposed adjacent the cellulosic substrate, at a  
10 temperature greater than about 550°F to oxidize the molten polypropylene layer to promote bonding thereof to the cellulosic substrate without a pretreatment step; and  
cooling said molten polymer layers to form a coherent structure.

20. The process of Claim 19, wherein said polyethylene is high density polyethylene.

15 21. The process of Claim 19, wherein said polyethylene is low density polyethylene.

22. The process of Claim 19, wherein said co-extruding step comprises co-extruding said polypropylene polymer, said polyethylene polymer and at least one additional polymer so as to sandwich said polyethylene polymer between said  
20 polypropylene polymer and said additional polymer.

23. The process of Claim 22, wherein said additional polymer is polypropylene.

24. The process of Claim 19, wherein the polypropylene layer comprises the majority component of said co-extruded polymer layer.

25 25. A multi-layer sheet material comprising:  
a cellulosic substrate; and

*Sub A1*

*Sub A  
cont'd*

a co-extruded polymer layer on a surface of the cellulosic substrate comprising a polypropylene polymer layer adjacent the cellulosic substrate and a polyolefin polymer layer formed of a polymer other than polypropylene overlying said polypropylene polymer layer,

5        wherein the multi-layer sheet material has an adhesive strength between the polypropylene polymer layer and the cellulosic substrate that is greater than the cohesive strength of the cellulosic substrate.

26.      The multi-layer sheet material of Claim 25, wherein said polypropylene polymer layer and said polyolefin polymer layer are co-extruded directly onto a surface 10     of the cellulosic substrate.

*Sub B  
cont'd*

27.      The multi-layer sheet material of Claim 26, wherein said polypropylene layer penetrates into at least a portion of said cellulosic substrate layer.

28.      The multi-layer sheet material of Claim 25, wherein and said polyolefin polymer layer comprises high density polyethylene polymer.

15        29.      The multi-layer sheet material of Claim 25, wherein and said polyolefin polymer layer comprises low density polyethylene polymer.

30.      The multi-layer sheet material of Claim 25, wherein the polypropylene layer comprises the majority component of said co-extruded polymer layer.

20        31.      The multi-layer sheet material of Claim 30, wherein the polypropylene layer comprises at least about 80 weight percent of said co-extruded polymer layer.

32.      The multi-layer sheet material of Claim 25, further comprising at least one additional polymeric layer overlaying said polyolefin layer.

33.      The multi-layer sheet material of Claim 32, wherein said at least one additional polymeric layer overlaying said polyolefin layer is a polypropylene layer.

25        34.      A co-extruded polymer coated sheet material, comprising:  
                  a cellulosic substrate; and

*Sub A*

polypropylene/polyethylene/polypropylene layer co-extruded directly onto a surface of the cellulosic substrate so that one of the polypropylene layers is adjacent a surface of the cellulosic substrate,  
wherein the polypropylene layer adjacent the cellulosic substrate comprises the majority  
5 component of said co-extruded layers and wherein the sheet material has an adhesive strength between the polypropylene layer and the cellulosic substrate that is greater than the cohesive strength of the cellulosic substrate.

35. A release liner comprising:  
a cellulosic substrate;  
10 a co-extruded polymer layer on said cellulosic substrate comprising a polypropylene polymer layer adjacent a surface of said porous substrate and a polyolefin polymer layer formed of a polymer other than polypropylene overlying said polypropylene polymer layer, wherein the adhesive strength between the polypropylene polymer layer and the cellulosic substrate is greater than the cohesive strength of the  
15 cellulosic substrate; and  
a release coating on an outer surface of the co-extruded polymer layer.

36. The release liner of Claim 35, wherein said polypropylene layer penetrates into at least a portion of said cellulosic substrate layer.

37. The release liner of Claim 35, wherein and said polyolefin polymer layer  
20 comprises high density polyethylene polymer.

38. -- The release liner of Claim 35, wherein and said polyolefin polymer layer comprises low density polyethylene polymer.

39. The release liner of Claim 35, wherein the polypropylene layer comprises the majority component of said co-extruded polymer layer.

25 40. The release liner of Claim 39, wherein the polypropylene layer comprises at least about 80 weight percent of said co-extruded polymer layer.

*Spec A  
cont*

41. The release liner of Claim 35, further comprising at least one additional polymeric layer overlaying said polyolefin layer.
42. The release liner of Claim 41, wherein said at least one additional polymeric layer overlaying said polyolefin layer is a polypropylene layer.
- 5        43. A release liner comprising:  
            a cellulosic substrate;  
            a polypropylene/polyethylene/polypropylene layer co-extruded directly onto a surface of the cellulosic substrate so that one of the polypropylene layers is adjacent a surface of the cellulosic substrate,  
10        wherein the polypropylene layer adjacent the cellulosic substrate comprises the majority component of said co-extruded layers and wherein the sheet material has an adhesive strength between the polypropylene layer and the cellulosic substrate that is greater than the cohesive strength of the cellulosic substrate; and  
            a release coating on an outer surface of the co-extruded polymer layer.

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